

BAKER & DANIELS LLP

300 N. Meridian, Suite 2700
Indianapolis, Indiana 46204
(317) 237-8691

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 10/762,095 Confirmation No. 4559
Applicant : Aaron Schipper
Filed : 01/21/2004
TC/A.U. : 1723
Title : Apparatus for Removing Air and/or
Debris from a Flow of Liquid
Examiner : Benjamin M. Kurtz
Docket No. : TCI-P003
Customer No. : 27268

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION UNDER 37 C.F.R. § 1.131 OF AARON SCHIPPER

I, Aaron Schipper, the inventor of the invention disclosed and claimed in the above-identified patent application, hereby declare as follows:

1. I have a degree in Mechanical Engineering Technology from Purdue University. I have been experience in the field of hydronics of about 13 years. More specifically, I have experience in the field of removing air/or debris from hydronic systems of about 7 years.
2. I consider myself to have to have at least ordinary skill in the art of hydronics and the art of air/or debris removal.
3. I have been informed that the Examiner in the above-identified application objected to the amendment to the specification dated 8/29/07 that amended paragraph [0015] to state that inlet 20 and outlet 22 are devoid of flow restrictions. Figure 1 of the application as filed clearly shows inlet 20 and outlet 22 are devoid of flow restrictions. Thus, the application as filed provides clear support for the amendment to the specification dated 8/29/07. Further, unlike the device of U.S. Patent No. 3,668,822, titled "Flow Resistance Equalizer For Liquid Circulation System", one object of the device shown in Figure 1 of the present application is to have minimal impact on the rate of flow of fluid through inlet 20 and outlet 22 to increase

the efficiency of the hydronic system. I believe one of ordinary skill in the art of hydronics would recognize this objective. To provide a flow restriction in inlet 20 and/or outlet 22 would defeat this objective. Thus, in further support of what is shown in Figure 1, I believe it is inherent that inlet 20 and outlet 22 are devoid of restrictions.

4. I have been informed that the Examiner is relying on U.S. Patent No. 6,893,485 to MacDuff to support a rejection of claims 1, 27-29, 31-38, 41, 42, 48-49, and 62. Based on my experience in the field of hydronics, the device of MacDuff appears to be designed for use in a hydronic system to remove air from a liquid. In a hydronic system, such as a radiant heat system, the fluid would cycle over the device of MacDuff multiple times. With each pass, more air would likely be removed.

5. I have been informed that the Examiner is relying on U.S. Patent No. 5,500,132 to Elmi to support the rejection of claims 1, 27-29, 31-38, 41, 42, 48-49, and 62. Based on my experience in the field of hydronics, the device of Elmi does not appear to be intended for use in a hydronic system. Rather, the device of Elmi appears to be generally intended to remove oil from water in a single pass system.

6. MacDuff generally relates to removal of air from a liquid. Elmi generally relates to removing liquid from liquid. Because of the unpredictability of fluid mechanics, when compared to other mechanical arts, it is difficult to predict whether the coalescing functions of a liquid/liquid system would carryover to an air/liquid system. Thus, it is difficult to predict whether the coalescing functions of Elmi will carryover to MacDuff.

7. The device described in the present application provides unexpected results. In an effort to determine the effectiveness of the device, tests were performed demonstrating the ability of the device to remove particles and oxygen from a liquid. Unexpectedly, the device was very effective in removing small particles (5 microns or less). For example, test results indicate that 95.2% of particles of this size were removed in 1440 minutes of circulation. This degree of removal was unexpected. Further, the device described in the present application was very effective at removing "light" particles (i.e. those having a density less than the liquid). For example, test results indicate that 99.33% of cellulose was removed from water in 540 minutes of circulation. This ability to remove light particles was unexpected. Another indicator of the effectiveness of the device described in the present application is its ability to remove air from a hydronic system. For example, observations indicate that so

much air is removed by the device that air pockets are eliminated in other parts of the hydronic system. It is believed that water that passes through the device contains so little air that it adsorbs air from other parts of the hydronic system (i.e. air pockets) that is then removed by the device. Eventually the air pockets are eliminated, which eliminates problems associated with air pockets in hydronic systems.

8. I have been informed that the Examiner is relying on U.S. Patent No. 5,676,740 to Schwartz to support the rejection of claims 36-38, 41, 42, 53-57, and 59. As part of the rejection, the Official Action states that the diffuser 40 of Schwartz is "an obvious structural equivalent" to the claimed "wire mesh retaining wall." As shown in Schwartz and described therein, diffuser 40 is a cylindrical sleeve having holes that diffuse and distributes the liquid. As such, diffuser 40 acts as a flow restrictor that distributes fluid around the perimeter of brush set 36. As shown in Figure 2 of Schwartz, the majority of the surface area of the cylindrical sleeve is not occupied by holes, unlike wire mesh retaining wall 52 of the present application. Unlike diffuser 40 of Schwartz, one object of the claimed wire mesh retaining wall is to reduce the any flow restriction. Further, because of the limited flow restriction, the wire mesh retaining wall has little, if any ability to diffuse or distribute liquid to the claimed wire mesh tubes. Based on this, I do not believe the diffuser 40 of Schwartz is structurally equivalent to the claimed wire mesh retaining wall.

9. I hereby declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements, and the like so made are punishable by fine or imprisonment, or both, under Section 1001, Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: 4-2-08

By: 
Aaron Schipper